What is claimed is:

1. A polishing pad which performs a polishing operation by moving in contact with a surface of an object being polished, the polishing pad comprising:

a polishing layer composed of a polymeric matrix and liquid microelements embedded in the polymeric matrix,

wherein open pores defined by the embedded liquid microelements are distributed across a surface of the polishing layer.

2. The polishing pad of claim 1, wherein the polymeric matrix is a hydrophilic polymeric matrix.

3. The polishing pad of claim 2, wherein the hydrophilic polymeric matrix is formed by introducing a hydrophilic compound into a material for the polymeric matrix through chemical bonding or mixing.

4. The polishing pad of claim 3, wherein the hydrophilic polymeric matrix contains 1-20 weight percent of the hydrophilic compound, based on the total weight of an isocyanate prepolymer.

5. The polishing pad of claim 2, wherein the hydrophilic compound comprises at least one material selected from the group consisting of polyethylene glycol, polyethylenepropylene glycol, polyoxyethylene alkylphenolether, polyoxyethylene alkylether, polyethylene glycol fatty acid ester, polyoxyethylene alkylamine ether, glycerine fatty acid ester, sugar fatty acid ester, and sorbitol fatty acid ester.

6. The polishing pad of claim 5, wherein the hydrophilic compound is polyethylene glycol having a molecular weight of 200-10000.

7. The polishing pad of claim 2, further comprising a support layer, which has a seamless interface with the polishing layer and is transparent or semitransparent to light used to detect the state of the surface of the object being polished.

8. The polishing pad of claim 1, wherein the polishing layer further comprises hollow polymeric microelements embedded in the polymeric matrix, and open pores defined by the hollow polymeric microelements are also distributed across the surface of the polishing layer.

9. The polishing pad of claim 1, wherein when the surface of the polishing layer is abraded by the polishing operation, the embedded liquid microelements are exposed at the surface of the polishing layer so that the open pores are continuously formed.

10. The polishing pad of claim 1, wherein the embedded liquid microelements are spherical microelements uniformly distributed within the polymeric matrix.

11. The polishing pad of claim 10, wherein an average diameter of the embedded liquid microelements and the pores is in a range of 1-60 μm.

12. The polishing pad of claim 1, wherein a material for the embedded liquid microelements is a liquid material which is chemically incompatible with the polymeric matrix.

13. The polishing pad of claim 12, wherein the liquid material comprises at least one material selected from the group consisting of aliphatic mineral oil, aromatic mineral oil, silicon oil without a hydroxyl group in a molecule, soybean oil, coconut oil, palm oil, cotton seed oil, camellia oil, and hardened oil.

14. The polishing pad of claim 12, wherein the content of the liquid material is 20-50 weight percent, based on the total weight of a material for the polymeric matrix.

15. The polishing pad of claim 1, further comprising a structure or pattern including a flow channel on the surface of the polishing layer in order to facilitate delivery of a polishing slurry.

16. The polishing pad of claim 1, wherein the polishing layer is semitransparent to light used to detect the state of the surface of the object being polished.

17. A method of manufacturing a polishing pad, the method comprising:

mixing a material for a polymeric matrix with a liquid material;

performing gelling and curing of the mixture, thereby forming a polishing layer comprising the polymeric matrix, liquid microelements embedded in the polymeric matrix, and pores defined by the embedded liquid microelements on its surface; and

processing the polishing layer.

18. The method of claim 17, wherein the mixing comprises mixing the liquid material with a dispersing agent.

19. The method of claim 18, wherein the content of the dispersing agent is 1-5 weight percent, based on the total weight of the material for the polymeric matrix.

20. The method of claim 18, wherein the dispersing agent comprises at least one material selected from the group consisting of anionic surfactants such as higher alcohol sulfuric acid ester salt, higher alkyl ether sulfuric acid ester salt, sodium alkyl benzene sulfonate, α-olefin sulfonic acid salt, and phosphate ester salt; higher alkylamine type and quaternary ammonium type cationic surfactants; amino acid type and betaine type amphoteric surfactants; siloxane-oxyalkylene copolymer, polyoxyethylene polymer, polyoxyethylene-polyoxypropylene copolymer, glycerine fatty acid ester, sugar ester, and sorbitol fatty acid ester.

21. The method of claim 17, wherein the polymeric matrix is a hydrophilic polymeric matrix.

22. The method of claim 21, wherein the hydrophilic polymeric matrix is formed by introducing a hydrophilic compound into the material for the polymeric matrix through chemical bonding or mixing.

23. The method of claim 22, wherein the hydrophilic polymeric matrix contains 1-20 weight percent of the hydrophilic compound, based on the total weight of an isocyanate prepolymer.

24. The method of claim 21, wherein the hydrophilic compound comprises at least one material selected from the group consisting of polyethylene glycol, polyethylenepropylene glycol, polyoxyethylene alkylphenolether, polyoxyethylene alkylether, polyethylene glycol fatty acid ester, polyoxyethylene alkylamine ether, glycerine fatty acid ester, sugar fatty acid ester, and sorbitol fatty acid ester.

25. The method of claim 24, wherein the hydrophilic compound is polyethylene glycol having a molecular weight of 200-10000.

26. The method of claim 17, wherein the mixing comprises mixing a hollow polymer with the mixture.

27. The method of claim 26, wherein a ratio of the weight of the liquid material to the weight of the hollow polymer is 8.

28. The method of claim 17, wherein the liquid material is chemically incompatible with the material for the polymeric matrix.

29. The method of claim 28, wherein the liquid material comprises at least one material selected from the group consisting of aliphatic mineral oil, aromatic mineral oil, silicon oil without a hydroxyl group in a molecule, soybean oil, coconut oil, palm oil, cotton seed oil, camellia oil, and hardened oil.

30. The method of claim 29, wherein the molecular weight of the liquid material is in a range of 200-5000.

31. The method of claim 17, wherein the content of the liquid material is 20-50 weight percent, based on the total weight of the material for the polymeric matrix.